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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/539,458	03/30/2000	Mark S. Chang	1346P/DA01028	8108

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EXAMINER	
PHAM, HOAI V	

ART UNIT	PAPER NUMBER
2814	

DATE MAILED: 09/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/539,458	Applicant(s) CHANG ET AL.	
	Examiner Hoai v Pham	Art Unit 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 May 2003* .

2a)☒ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 8-21* is/are pending in the application.

4a) Of the above claim(s) *8-16* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 17-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 March 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Shinmori [U.S. Pat. 6,630,707] newly cited.

Shinmori (fig. 5, cols 3-5) discloses a flash memory device comprising:

a plurality of gate stacks including a plurality of floating gates (122) and a plurality of control gates (7) disposed on a semiconductor substrate (11);

at least one component (10) including a polysilicon layer having a top surface, wherein the at least one component (10) is formed on a field oxide region (18) configured to separate the plurality of gate stacks;

a silicide on the top surface of the polysilicon layer of the at least one component (10) (col. 4, lines 46-49);

an insulating layer (27) covering the plurality of gate stacks, the at least one component and the silicide, the insulating layer having a plurality of contact holes (13) therein.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinmori [U.S. Pat. 6,630,707] newly cited in view of Ma et al. [U.S. Pat. 5,939,753]

Shinmori discloses all the limitation as claimed above except: the silicide includes a titanium silicide or a cobalt silicide. However, Ma et al. discloses that the silicide (108, 109) and their uses are well-known in the art (see col. 8, lines 1-7). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to select titanium silicide or cobalt silicide as known materials, as taught by Ma et al., into the device of the Shinmori to form a dual-layer structure with low resistance, which is made up of a polysilicon and metal silicide. Moreover, selection of a known material

based on its suitability for its intended use supported a prima facie obviousness determination in Sinclair & Carroll Co., Inc. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945).

6. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shinmori [U.S. Pat. 6,630,707] newly cited, in view of Applicant Admitted Prior Art (figs. 1-3, pages 1-4).

Shinmori (fig. 5, cols 3-5) discloses a flash memory device comprising:

a gate insulating layer;

a gate stack formed on the insulating layer, wherein the gate stack comprises:

a first floating gate (122);

an insulating layer formed on the first floating gate (122); and

a second polysilicon layer formed on the insulating layer.

a field oxide region (18) located adjacent to the gate insulating layer;

a component (10) located on the field oxide region (18), wherein the component (10) is formed from the second polysilicon layer; and

a silicide layer formed on the second polysilicon layer.

Shinmori does not mention that the gate insulating layer formed of oxide and the first floating gate formed of polysilicon. However, Applicant Admitted Prior Art discloses that the gate oxide layer (55) and polysilicon floating gate are well-known in the art (see page 3, lines 1-3). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to select oxide and polysilicon as known materials, as taught by Applicant Admitted Prior Art , into the device of the Shinmori to form gate

insulating film and floating gate. Moreover, selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in Sinclair & Carroll Co., Inc. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945).

7. Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinmori [U.S. Pat. 6,630,707] newly cited in view of Applicant Admitted Prior Art (figs. 1-3, pages 1-4) as applied to claim 17 above, and further in view of Ma et al. [U.S. Pat. 5,939,753]

The combination of Shinmori and Applicant Admitted Prior Art discloses all the limitation as claimed above except: the silicide includes a titanium silicide or a cobalt silicide. However, Ma et al. discloses that the silicide (108, 109) and their uses are well-known in the art (see col. 8, lines 1-7). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to select titanium silicide or cobalt silicide as known materials, as taught by Ma et al., into the device of the Shinmori to form a dual-layer structure with low resistance, which is made up of a polysilicon and metal silicide. Moreover, selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in Sinclair & Carroll Co., Inc. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945).

8. Claims 1, 17, 18 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (figs. 1-3, pages 1-4), in view of Becker et al. [U.S. Pat. 6,051, 501] previously cited.

With respect to claims 1 and 17, Applicant Admitted Prior Art discloses a flash memory device comprising:

an oxide layer (55);

a gate stack formed on the oxide layer (55), wherein the gate stack comprises:

a first polysilicon layer (62);

an insulating layer (64) formed on the first polysilicon layer (62); and

a second polysilicon layer (66) formed on the insulating layer.

a field oxide region (54) located adjacent to the oxide layer (55);

a component (76) located on the field oxide region (54), wherein the component (76) is formed from the first polysilicon layer.

Applicant Admitted Prior Art fails to disclose a silicide layer formed on the first polysilicon layer. However, Becker et al. discloses that the silicide layer (58) formed on the poly layer (54) (see col. 3, lines 33-52). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to use silicide layer on the polysilicon component as taught by Becker et al. into the device of Applicant Admitted Prior Art because silicide layer would provide the known purpose as an etch stop layer (see col. 3, lines 50-52).

With respect to claim 18, Becker et al. discloses that the silicide layer (58) prevents etching through the polysilicon layer (54) (see fig. 5 and col. 3, lines 50-52).

With respect to claim 21, Applicant Admitted Prior Art discloses that the component (76) comprises a resistor (page 1).

9. Claims 2, 3, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant Admitted Prior Art (figs. 1-3, pages 1-4), in view of Becker et al. [U.S. Pat. 6,051, 501] previously cited, as applied to claims 1 and 17 above, and further in view of Ma et al. [U.S. Pat. 5,939,753]

The combination of Applicant Admitted Prior Art and Becker et al. disclose all the limitation as claimed above except: the silicide includes a titanium silicide or a cobalt silicide. However, Ma et al. discloses that the silicide (108, 109) and their uses are well-known in the art (see col. 8, lines 1-7). Therefore, it would have been obvious to one having skill in the art at the time the invention was made to select titanium silicide or cobalt silicide as known materials, as taught by Ma et al., into the device of the combination to form a dual-layer structure with low resistance, which is made up of a polysilicon and metal silicide and provide the known purpose as an etch stop layer. Moreover, selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in Sinclair & Carroll Co., Inc. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945).

Response to Arguments

10. Applicant's arguments with respect to claims 1-3 and 17-21 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

12. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoai v Pham whose telephone number is 571-272-1715. The examiner can normally be reached on M-F.

14. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

15. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Hoai Pham
Patent Examiner